

REMARKS

Favorable reconsideration and allowance of this application are requested.

By way of the amendment instructions above, , the specification has been revised so as to address the Examiner's criticisms and to conform certain expressions therein. For example, the specification has been clarified to the extent that TETRONIC® 304 was employed in Example 1 and is an air detraining agent in accordance with the present invention due to its initiation by ethylene diamine and its relative low MW of 1650. The lower limit of the general MW range expressed at page 3, line 17 has been changed so as to be commensurate with the lower MW limit expressed in Example 1. Similarly, the upper MW limit on page 10, line 5 has been changed so as to be commensurate with the upper MW limit appearing at page 3, line 17.

Many of the original claims have also been revised so as to clarify the claimed invention and to address the Examiner's rejections under 35 USC §112. More specifically, independent claim 1 has been revised so as to emphasize that the block polyether component employed in the aqueous superplasticizer solutions has a number average molecular weight of between about 700 to about 3500, and initiated with an initiator containing reactive diamine or glycol terminal groups capable of adding to C₂ – C₄ epoxides. Support for such changes may be found throughout the specification, for example, at page 3, lines 13-21, page 5, line 13 through page 6, line 2, and Example 1.

Claims 12-18 are new. Claim 12 is in independent form and similar to the amended version of claim 1, except that the MW range is recited to be between about 700 to about 2500, as supported by page 10, line 27. New claim 14 requires the initiator to be either ethylene diamine or propylene glycol, as supported at page 9, line 26 and at page 10, line 18, respectively. Claims 13 and 15-18 are based on originally filed claims, but depend directly or indirectly from new independent claim 12.

Therefore, claims 1-18 remain pending herein for which favorable reconsideration and allowance are solicited.

The only issues remaining to be resolved in this application is the Examiner's art-based rejections. Specifically, the Examiner rejects prior claims 1-11 under 35 USC §102(e) as allegedly being anticipated by Budiansky et al, Berke et al, Ou et al or Bury et al. Applicants respectfully suggest that none of the applied publications is appropriate as a reference against the herein pending claims.

Applicants note in this regard that the present invention is novel in several respects. For example, the present invention is novel in that the applicants have discovered that a **particular** type of EO/PO block polyether may be usefully employed as an air detaining agent in combination with a superplasticizer which result in stable aqueous solutions thereof. The herein claimed superplasticizer solutions as claimed herein therefore are capable of lowering the air content of cement slurries while being stable, i.e., the solution is not cloudy or hazy which is indicative of incompatibility of the air-detaining additive with the aqueous polymeric superplasticizer solution.

The **particular** type of EO/PO block polyether that the present applicants have discovered achieve the desired results noted above are those which are initiated by an initiator containing reactive diamine or glycol terminal groups capable of adding to C₂ – C₄ epoxides and having a relatively low MW (i.e., a number average molecular weight of between about 700 to about 3500).

The data in the originally filed specification show that a large number of potential air detaining agents do not achieve a stable (i.e., crystal clear) solution when added to a superplasticizer and/or do not achieve adequate lowering of entrained air. Particularly instructive of this selectivity is the fact that TETRONIC® 701 did **not** result in a stable solution whereas TETRONIC® 304 did, even though both surfactants are initiated with ethylene diamine, but the former has a relatively high MW of 3600 outside the scope of the present invention, whereas the latter has a relatively low MW of 1650 in accordance

within the scope of the present invention. The evidence of record demonstrates that there is no equivalency nor predictability of achieving both lowered entrained air content and a stable solution when even chemically similar components are employed.

It is against the patentability backdrop described above that the applied publications must be observed. None, however, discloses or suggests the present invention. As such, the applied references cannot anticipate or render obvious the invention defined in the presently pending claims.

In this regard, applicants note that Budansky et al teaches the use of di-block polyoxyalkylene copolymers as air-entraining agents. However, Budansky et al do not require the presence of a polymeric superplasticizer. Hence, Budansky et al cannot anticipate or render obvious the present invention. Clearly, Budansky et al do not suggest at all to a skilled person regarding the criticality of employing the **particular** air-detraining agent as defined in the present invention in order to achieve stable solutions with a superplasticizer.

Berke et al teach an additive composition which includes a triblock copolymer. Berke et al however, do not require that the triblock copolymer be stable in the admixture. Evidence for this can be seen in Example 4 of Berke et al wherein he cites Pluronic F68 triblock copolymer as an example of one that may be satisfactorily employed in the therein disclosed admixtures. However, PLURONIC® 68 is not compatible in the superplasticizer solutions of the present invention.¹ Moreover, Berke et al explicitly require the triblock copolymer have a molecular weight of *no less than 4000*. Thus, Berke et al would clearly not lead an ordinarily skilled person to the particularly low MW air detraining agents claimed in the present invention.

¹ <https://worldaccount.basf.com/wa/NAFTA/Catalog/pi/ChemicalsNAFTA/BASF/Brand/pluronic>

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Similarly, the applied Ou et al publication teaches that a triblock copolymer may be employed, but discloses that the "best" triblock copolymer is PLURONIC® L81 – a copolymer which is not with the scope of the present invention.

Bury teach admixture compositions comprising a water soluble air controlling agent and a polymeric superplasticizer dispersant. However, Bury does not require that the water soluble air controlling agent be stable in the polymeric superplasticizer solution. With the exception of PLURONIC® L35, all other triblock copolymer examples in Bury are outside the scope of the present invention. Bury requires that the hydrophobic defoamer is represented by the triblock structure $[EO]_s[PO]_t[EO]_u$ wherein $t > (s+u)$. In accordance with the present invention, however, $t < (s+u)$.

In view of the amendments and remarks above, applicants suggest that this application is in condition for allowance and Official Notice to that effect is solicited.

Respectfully submitted,

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